

REMARKS

Reconsideration and withdrawal of the rejections of the application are respectfully requested in view of the amendments and remarks herewith, which place the application into condition for allowance or into better condition for appeal.

I. STATUS OF CLAIMS AND FORMAL MATTERS

Claims 1-5, 7-10 and 12-15 are now pending. Claims 1, 3 and 9 were amended, and claims 11-14 were renumbered to 12-15, respectively, without prejudice.

No new matter has been added by these amendments.

It is submitted that these claims are patentably distinct from the prior art cited by the Examiner, and that these claims are in full compliance with the requirements of 35 U.S.C. §112. The amendments and remarks made herein are not made for the purpose of patentability within the meaning of 35 U.S.C. §§ 101, 102, 103 or 112; but rather the amendments and remarks are made simply for clarification.

II. 35 U.S.C. §112, First Paragraph, Rejections

Claims 1-5, 7-10 and 12-15 were rejected under 35 U.S.C. §112, first paragraph, as allegedly lacking written description. The Examiner alleges that “in presence of an essentially anhydrous protic solvent” is new matter. Applicants disagree.

The Examiner is respectfully directed to page 4, lines 12-13, of the specification which states that the preferred chlorination can be carried out “in the presence of a solvent.” The preferred solvents, in turn, are grouped into two classes, one of which is “essentially anhydrous, protic solvents” (*see* page 5, lines 10-11). Thus, written description clearly exists, i.e., Applicants had possession of the invention, and no new matter was added.

Consequently, reconsideration and withdrawal of the Section 112, first paragraph (written description), rejection are respectfully requested.

III. 35 U.S.C. §112, First Paragraph, Rejections

Claims 1-5, 7-10 and 12-15 were rejected under 35 U.S.C. §112, first paragraph, for allegedly lacking enablement. The Examiner alleges that enablement is lacking for alkenyl and alkynyl substituents in the R¹ groups. Applicants disagree.

It is respectfully pointed out that alkenyl or alkynyl groups are not defined for the final products of formula (I). The compounds of formula (I) do not contain alkenyl or alkynyl group in the groups R¹, R² and R³. It is noted that the alkenyl or alkynyl groups in the compound of formula (II) are in the radical X linked to the sulfur group. The group -S-X- is removed from the triazine ring during chlorination. Therefore, it is of no moment whether the alkenyl group or alkynyl group in the radical X reacts with chlorine or is inert. The result of the chlorination is the removal of the mercaptone group. A substantial reactivity of the alkenyl or alkynyl group will thus have an effect on the consumption of chlorine but not on the result of the process. This is clearly within the purview of one skilled in the art.

Further, it is respectfully pointed out that “the laws do not require a specification to be a blueprint in order to satisfy the requirement for enablement under 35 U.S.C. §112”. *Staehelin v. Secher*, 24 U.S.P.Q.2d 1513, 1516 (Bd. Pat. App. & Int. 1992). Indeed, a specification need not disclose – and best omits — that which is well known in the art. *In re Buchner*, 929 F.2d 660, 661, 18 U.S.P.Q.2d 1331, 1332 (Fed. Cir. 1991).

It is respectfully submitted that the assertions in the Office Action that undue

experimentation is required to practice the instantly claimed invention are inaccurate. The Examiner is respectfully invited to review *In re Wands*, 8 U.S.P.Q. 2d 1400 (Fed. Cir. 1988), wherein the Federal Circuit stated at 1404 that:

Enablement is not precluded by the necessity for some experimentation such as routine screening. However, experimentation needed to practice the invention must not be undue experimentation. 'The key word is undue, not experimentation.' The determination of what constitutes undue experimentation in a given case requires the application of standard of reasonableness, having due regard for the nature of the invention and the state of the art. The test is not merely quantitative, since a considerable amount of experimentation is permissible, if it is merely routine, or if the specification in question provides a reasonable amount of guidance with respect to the direction in which the experimentation should proceed ... [Citations omitted].

Determining whether undue experimentation is required to practice a claimed invention turns on weighing the factors summarized in *In re Wands*. These factors include, for example, (1) the quantity of experimentation necessary; (2) the amount of direction or guidance presented; (3) the presence or absence of working examples of the invention; (4) the nature of the invention; (5) the state of the prior art; (6) the relative skill of those in the art; (7) the predictability or unpredictability of the art; and (8) the breadth of the claims; all of which must be taken into account.

Against this background, the Examiner's contention that enablement is lacking for alkenyl and alkynyl substituents is without merit. As Applicants explained in the previous Amendment, the presence of unsaturated groups such as alkenyl or alkynyl groups in group R¹ of the triazine molecule of formula (II) does not mean that the chlorination of a compound of formula (II) will not produce the desired product of formula (I). The chlorination of the compound of formula (I) results in the reaction of the group X-S- with chlorine first, i.e., group X-S- is far more reactive than a group R¹= alkenyl or alkynyl. Therefore, the chlorination can be

stopped before the alkenyl or alkynyl will react with chlorine in substantial amounts. Contrary to the Examiner's assumption, the presence of alkenyl or alkynyl groups in the compounds of formula (II) or desired compounds of formula (I) is, thus, not incompatible with the inventive process.

Applicants also disagree with, *inter alia*, the Examiner's allegations that the art is unpredictable and that there is inadequate enabling disclosure/guidance in the specification. The instant invention is directed to a process for the chlorination of heteroaromatic compounds having an amino function and an alkylthio functional group (or thio groups). The heteroaromatic ring, as instantly claimed, is a 1,3,5-triazine ring. The reaction is demonstrated by Examples (a) to (e) in the specification to work well and selectively at the alkylthio function. Therefore, one skilled in the art would also know that the process also works with the other compounds of formula (II) in a like manner.

Further, Applicants disagree with the remaining allegations of the Final Office Action. Undue experimentation would not be necessary to practice the instantly claimed invention. Applicants respectfully assert that it is normal practice for a skilled artisan to consider side reactions if specific functional groups are also present. The artisan would know to apply techniques such as utilizing protecting groups if the functional group is not to react.

Thus, applying *Wands* to the instant facts, it is clear that enablement exists, to wit, *inter alia*, that the quantity of experimentation necessary is low; the amount of direction or guidance presented is high; working examples are clearly present; the relative skill of those in the art is high; and the predictability of the art is also high. The assertions in the Final Office Action, e.g., that the instant invention presumably lacks enablement, therefore, are misplaced because undue experimentation would not exist.

Consequently, reconsideration and withdrawal of the Section 112, first paragraph, rejection are respectfully requested.

IV. 35 U.S.C. §103 Rejections

Claims 1-5, 7-10 and 12-15 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable to Giencke et al. (WO 97/08156) or U.S. Patent No. 6,069,114 to Lorenz et al. in view of Chakrabarti et al, *Tetrahedron*, **1975**, 31:1879-82. The rejection is traversed.

It is well-settled that there must be some prior art teaching which would have provided the necessary incentive or motivation for modifying the reference teachings. *In re Laskowski*, 12 U.S.P.Q. 2d 1397, 1399 (Fed. Cir. 1989); *In re Obukowitz*, 27 U.S.P.Q. 2d 1063 (BOPAI 1993). Further, “obvious to try” is not the standard under 35 U.S.C. §103. *In re Fine*, 5 U.S.P.Q. 2d 1596, 1599 (Fed. Cir. 1988). And, as stated by the Court in *In re Fritch*, 23 U.S.P.Q. 2d 1780, 1783-1784 (Fed. Cir. 1992): “The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggests the desirability of the modification.” Also, the Examiner is respectfully reminded that for the Section 103 rejection to be proper, **both the suggestion of the claimed invention and the expectation of success must be founded in the prior art, and not Applicants' disclosure.** *In re Dow*, 5 U.S.P.Q.2d 1529, 1531 (Fed. Cir. 1988).

Against this background, neither Giencke nor Lorenz, individually or in combination, teach, suggest or motivate a skilled artisan to practice the instantly claimed invention. Chakrabarti does not remedy the deficiencies in these references outlined by the Office Action, e.g, that Giencke does not teach an example for making 2-chloro-triazine using Applicant's chlorination process and reaction.

Further, Applicants respectfully reiterate that the instant invention provides for superior results. The instant invention is in recognition and demonstration that an efficient chlorination is possible by the selection/adoption of reaction parameters. Contrary to the reaction time, the parameters are the solvent and temperature conditions as set forth in the examples. Applicants submit that this is a significant advantage which one of skill in the art would not have recognized from the teachings of the references, either alone or in any fair combination.

The broader exploitation of the chlorination of thio-aminotriazine derivatives, as taught by Applicants, is a significant and unexpected advantage over what one might have expected from the teachings of the references. Specifically, the low yield obtained by transfer of the conditions used in the Chakrabarti reference to the chlorination of the methylthio-aminotriazine compound (II) was desperately low (see results reported at page 17 of the specification, Example (f), where a minimal yield of only 10% is reported). This must be contrasted with the reaction yields of 60 to 80% for the instant invention reported at Examples (a) through (e).

Applicants continue to disagree with the Examiner's criticism of the comparison tests. First, the low yield obtained by the transfer of the conditions used in the Chakrabarti reference to the chlorination of the methylthio-aminotriazine compound (II) was desperately low. It is submitted that in view of these results, one of skill in the art would not have expected the instant reaction to provide such a significantly improved yields, by the change in the reaction conditions. Second, the low yield is not due to a short reaction time. The chlorination was stopped after the starting material had reacted. A prolongation/variation of the reaction time would not have improved the yield. Third, the direct example to compare example (f) is example (e) because both processes include the same starting material and final product. The other examples show that the variation of the starting material can be made relatively freely without obtaining a substantially

different yield. The Examiner criticizes the difference in the reaction time but should note that this is readily explained if one considers the amount of starting material in example (f) is reduced compared with examples (a) to (e) and is, therefore, more quickly reacted.

The direct example to comparison example f) is example e) because both processes include the same starting material and final product. The other examples show that the variation of the starting material can be made relatively freely without getting a substantially different yield. The Examiner criticizes the difference in the reaction time but should note that this fact is easily explained if one considers that the amount of starting material in example f) is reduced compared with the examples a) to e) and, thus, is more quickly reacted.

Applicants respectfully reiterate that the instant invention is directed to a process for chlorination of heteroaromatic compounds having an amino function and an alkythio functional group (or very similar thio group). The reaction is demonstrated by examples b) to e) in the specification to work well and selectively at the alkythio function. Therefore, a person skilled in the art will understand that the process works also with the other compounds of formula (II) in like manner.

Applicants disagree with the allegation that Chakrabarti is dispositive. The process of Chakrabarti is a process which gives 10% yield when applied to the starting product as also used in example e). The reaction is quicker than that in the example of Chakrabarti but does not lead to the desired product in high yield. A prolonged reaction would not change the yield of the desired product since the starting material has been already consumed in the quick reaction.

Thus, while Applicants take the position that no *prima facie* case of obviousness exists, Applicants reiterate that the comparative data of record, which is set forth at pages 15-17 of the specification, is more than sufficient to overcome any such case.

Consequently, reconsideration and withdrawal of the Section 103 rejection are respectfully requested.

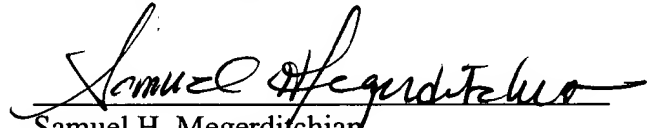
CONCLUSION

In view of the remarks and amendments herewith, the application is in condition for allowance or in better condition for appeal. Favorable reconsideration of the application and prompt issuance of a Notice of Allowance are earnestly solicited.

Respectfully submitted,

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